



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE PRIMARY EXAMINER

Application of

Inventor	Stephen W. Day, Daniel M. Hutcheson, G. Scott Campbell
Serial No.	09/749,064
Filed	December 27, 2000
Title	<b>FIBER REINFORCED COMPOSITE CORES AND PANELS</b>
Group Art Unit	1771
Examiner	Hai Vo
Docket	7751

Commissioner for Patents  
PO Box 1450  
Alexandria VA 22313-1450

Sir:

**DECLARATION UNDER 37 CFR § 1.132**

The undersigned, Stephen W. Day, declares that he is a co-inventor in the above application; that composite panels having core panels with reinforcing webs intersected by reinforcing struts, as set forth in amended claim 57, have several important advantages over cores which comprise only webs or only struts; that combined webs and struts, as set forth in amended claim 57, provide effective shear resistance in both longitudinal and transverse directions; that this structure also increases the load carrying strength of both the webs and the struts without increasing their weight because the intersecting webs and struts reduce each other's unsupported length and thereby reduce the tendency of each reinforcing web or strut to buckle under high loads; that the structure of amended claim 57 also permits the use of very low cost, low strength cellular core material since the cellular material, for example plastic foam, is not being called upon to restrain lateral buckling of the reinforcing members; that with webs or struts alone, stronger and more expensive foam is often required to increase this buckling resistance; that the advantages of the structure of amended claim 57 increases as core thickness and the corresponding length of the

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reinforcing members increases since unsupported reinforcing members buckle at substantially lower loads as their length increases; that since the struts actually penetrate the webs, as called for in claim 57, and are structurally bonded to them, localized loads, for example from impact, are effectively distributed among, and resisted by, adjacent reinforcing struts and webs or members; that when webs and struts intersect, load resistance by both the webs and the struts to compressive loads on the panel is significantly increased by reducing the unsupported length of each of the reinforcing members; that this reduces the need to use heavier skins to distribute compressive loads over a larger area of the panel, thus permitting the use of lighter skins and thereby increasing the efficiency of the composite structural panel in bending; that core reinforcements comprising a plurality of parallel rows of struts which are inclined to the skins, as in Maquet '805, are substantially less efficient at resisting compressive loads, thus requiring heavier skins in order to distribute the load over a larger area and/or requiring heavier struts than if the struts were perpendicular to the skins; that the combination of struts at acute angles relative to the webs and intersecting the webs, yields an especially efficient combination of compressive strength, bi-directional shear strength, impact resistance and bending strength to a composite structural panel; that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the above application or any patent issuing thereon

Date:

Aug. 12, 2003

  
Stephen W. Day